Environment Canada / Environnement Canada

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October 12th, 2012

EC File: 4703 003 013
NWB File: 2AM-DOH0713

Phyllis Beaulieu
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Via email : licensing@nunavutwaterboard.org

RE: Type A Water Licence 2AM-DOH0713, Hope Bay Mining Ltd.
Doris North Closure and Reclamation Plan (August 2012)

Environment Canada (EC) has reviewed the above-mentioned plan prepared and submitted by Hope Bay Mining Ltd. (HBML) to the Nunavut Water Board (NWB). EC's contribution to your request for specialist advice is based primarily on the mandated responsibilities of Subsection 36(3) under the pollution prevention provisions of the *Fisheries Act,* the *Species at Risk Act,* the *Canadian Environmental Protection Act* and the *Migratory Birds Convention Act.*

Background:

EC notes that Park L, Item 4 of the Type A Water License 2AM-DOH0713 required Hope Bay Mining Ltd. (HBML) to submit to the NWB an Interim Closure and Reclamation Plan within six months of the start of ore processing. However, Doris North was placed in care and maintenance on January 31, 2012 without having processed any ore on site. Therefore, HBML prepared and submitted this revised Closure Plan *"...to present the current closure obligations at site, how they will be met, and a plan for closing all facilities."* Lastly, the Proponent states: *"Once this closure plan has been reviewed by regulators, corrected as required, and approved by the NWB, HBML will then submit a revised security estimate for the project. Submitting the revised security estimate after the closure's plan approval will allow us to take into consideration material changes to the plan, if any, required by regulators after the review of the closure plan."*

Comments & Recommendations:

1. Section 3.1.5 Overburden Dump and Sedimentation Berm, page 10 states: *"The top of the Overburden Dump was covered with a layer of crushed rock and was used as overflow vehicle parking area. The 2H:1V side slopes are constructed of oversize rock and are stable. All materials and waste will be collected and disposed of as appropriate. The safety berms will be breached to allow free drainage. The top surface will be regraded to ensure positive drainage. The sedimentation berm will be breached to original ground level to restore natural flow paths."*

Without knowing whether the waste rock used to construct the berms were characterized for acid rock drainage (ARD), ***EC recommends the Proponent ensure that the re-grading and breeching of the berm does not expose potentially acid generating (PAG) rocks to air and water, which could result in the generation of acid.*** If the Proponent is uncertain of the waste rock ARD potential, it is recommended that the waste rock either be characterized to determine if it is PAG or find non-PAG materials as a cover for the areas after re-grading.

2. Section 3.6.8 Waste Rock and Ore Piles, page 15 states: *"Part of the waste rock will be used for the 15 m thick backfill for sealing the underground workings. Waste rock and ore management options will be assessed for the remaining material. One option is consolidating, contouring and covering the piles with an impermeable liner and a 0.3 m thick protective layer of crushed rock. Other options include moving the piles to Tail Lake for sub-aqueous disposal, or leaving the waste rock and ore in place. Additional options may also be considered. All above ground storage options are subject to approval. A design and/or description of the final waste rock and ore disposal or storage alternative will be included in the application for approval."*

   EC seeks clarification on whether or not the waste rock was characterized for metal leaching (ML)/ARD. ***If the Proponent is uncertain if waste rock characterization was completed, EC recommends the Proponent substantiate that 0.3 m crushed rock would be enough to prevent infiltration of water and oxygen that would react with sulphitic materials if present and potentially generate acid.*** EC supports the Proponent's idea of using an impermeable liner; however, the duration of time that the impermeable liner will remain impermeable is uncertain. ***Therefore, EC recommends that the overlying cover should be thick enough to be able to prevent seepage of water into the consolidated waste rock should the impermeable liner become permeable over time.***

3. Section 4 Post Closure Monitoring and Maintenance, page 17 states:

   "Monitoring to confirm that the closure objectives are met includes the following:

   - *The site should be visually inspected by a Professional Engineer annually for three consecutive years to ensure that permafrost degradation areas have stabilized.*
   - *The ore and waste rock covers should be regularly inspected by a qualified inspector to ensure the physical integrity of the cover is maintained.*
   - *The site should be inspected by an Arctic vegetation specialist to confirm suitability of the re-vegetation efforts. Inspections should be completed at the following intervals, unless otherwise recommended by the vegetation expert: Year 1, Year 3, Year 7 and Year 10 post closure.*
   - *Annual seep sampling program should be continued to detect any changes in the leachate chemistry downstream of the remediated areas.*

   Post closure monitoring will be conducted every two years for ten years. Maintenance will be performed on areas that monitoring identifies as needing repairs."

   EC notes that the Proponent uses the phrase "should be" when listing the monitoring activities to confirm the closure objective are met. EC requests clarification whether this is a suggestion that should be done or a commitment that will be done.

   EC recommends the Proponent commit to completing these monitoring activities and modify the wording of "should be" to "will be".

4. ***EC recommends the Proponent ensure all closure and reclamation activities do not expose any PAG material that could in time generate acid.***

If there are any changes to the plan, EC should be notified as further review may be necessary. In closing, please do not hesitate to contact the undersigned with any questions or comments with regards to the foregoing at (867) 669-4721 or via email at Lisa.Lowman@ec.gc.ca.

Yours truly,

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